

Breeds of Indian Cattle, Bombay Presidency

BY

K. HEWLETT, M.R.C.V.S.

Late Superintendent, Civil Veterinary Department, Bombay Presidency



CALCUTTA
SUPERINTENDENT GOVERNMENT PRINTING

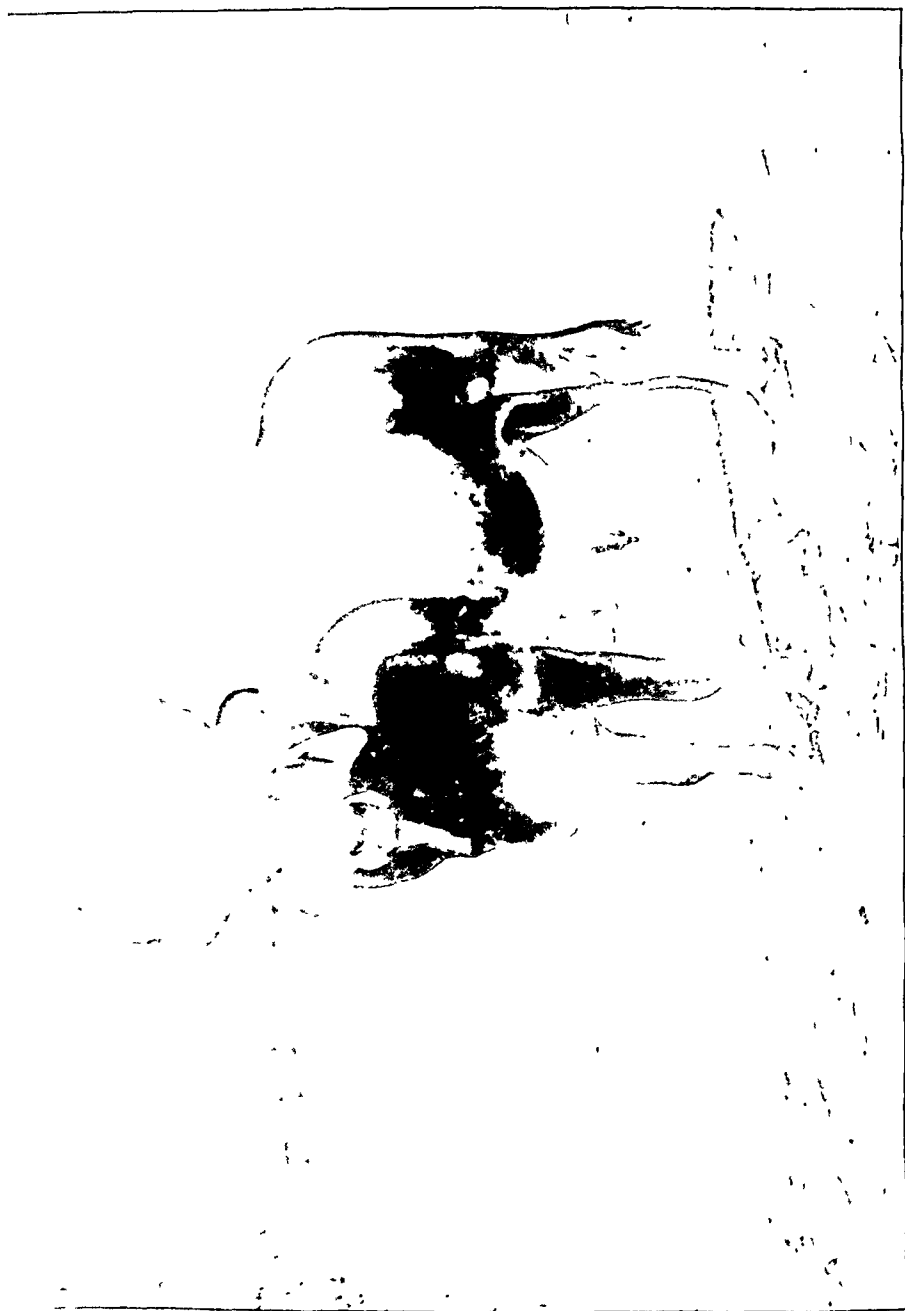
PREFACE

THE following report on the breeds of cattle of the Bombay Presidency Proper has been prepared in accordance with instructions received in Government Memo. R. D. No. 6389, dated 2nd July 1909, forwarding letter No. 844—62-M., dated 10th June 1909, from the Inspector General, Civil Veterinary Department.

2. The monograph is largely a compilation, although I accept responsibility for the facts stated, having in most cases verified them personally. The following works have been consulted:—“Cattle of the Bombay Presidency” by Major F. Joslen, “India in 1887” by Wallace, and “Text Book of Indian Agriculture” by Mollison. Quotations from these books are acknowledged in the text. In addition the records in the office of the Superintendent, Civil Veterinary Department, Bombay Presidency, have been consulted.

The photographs and measurements of the cattle were taken by the late Lieutenant-Colonel F. Joslen when Superintendent, Civil Veterinary Department. Mr. J. D. Buxy, Deputy Superintendent, Civil Veterinary Department of the Bombay Presidency, has assisted me in the preparation of the monograph and the correction of the proofs.

K. HEWLETT.



KANKREJ BULL.

Breeds of Indian Cattle, Bombay Presidency.

KANKREJI CATTLE.

These cattle are the pure type of the so-called Gujarat breed. They belong to one of the larger varieties of Indian cattle and their working capacity is considerable. They are active and strong and equally well adapted for the road, the plough or the mote. Cattle of this breed are met with throughout Gujarat, but are chiefly bred in North Gujarat in the States under the Palanpur Agency. The Kankrej States—Radhanpur, Wadial, Santapur, Varhi, Bhabdar, Deodar, Deesa and Palanpur—are centres near which these animals are largely bred. Government also maintain a herd at the Northcote Farm near Chharodi Railway Station on the Bombay, Baroda and Central India Railway in the Ahmedabad district. Although these cattle are met with throughout Gujarat and bred true to type to some extent in the British districts of Ahmedabad and Kaira, yet the type tends to vary towards the south of the province. This is due to the fact that the breeders of the south are not so careful to keep their herds pure and have allowed intermixture of other strains. These impure strains have been termed the Gujarati breed in distinction to the pure Kankreji breed, but they are merely a modification of the Kankrej strain and do not constitute a separate breed of their own.

The Kankreji breed is one of the finest large breeds of cattle met with in India and by many is regarded as the finest for massiveness and various accompanying good qualities. A good specimen of a Kankreji bullock will measure from 54 to 61 inches behind the hump with a girth of from 69 to 81 inches. The bulls stand somewhat less, a good specimen measuring from 55 to 57 inches behind the hump with girth measurements of from 73 to 81 inches; cows are smaller, measuring in good specimens from 48 to 55 inches behind the hump with girth measurements of 64 to 67 inches. The predominant colour of the breed is iron or silver grey, frequently with black points—the front of the forearms, knees, fetlocks and pasterns being generally black as also the tuft of the tail. Iron grey is not an infrequent colour and even in pure-bred animals, reds, fawns and blacks are occasionally met with. The bulls are darker than the cows or bullocks, being commonly iron

grey or iron grey with nearly black extremities. Sometimes but not often they are nearly entirely black. A common colouring for bulls is blackish grey with the sides of the chest, brisket, sheath, back of the legs and ears white or silver grey. The bullocks are usually lighter in colour than either the cows or the bulls. Spotted and broken colours are never met with in pure-bred stock, but it is not unusual to see pure-bred animals with reddish hair round the base of the horns and on the ridge of the frontal bone. These reddish markings are more commonly seen in young stock and tend to disappear in later life, but in some specimens they persist. All the cattle have a tendency to get lighter in colour during the monsoon. Old bulls which have been dark iron grey or almost black get silver grey in old age. "Kankreji cattle have a very symmetrical, uniform, high caste appearance. The head shows the most strongly marked and constant characteristics. The horns are thick and quite round at the base and spring from the upper flattened ridge of the frontal bone, which extends straight across from horn to horn, protruding from the forehead on each side giving the horns the appearance of being covered with skin for the first two or three inches from their base. This skin has a tendency to recede in aged animals. The horns are very symmetrical. They curve outwards, slightly backwards, then straight upwards and inwards with the tips curved backwards. The forehead is broad and flat with a slightly rounded elevation over both the eyes. The eyes are big, black and bold but placid. The opening between the eyelids is elliptical, the upper lid, especially in the adult bull, generally having two or three parallel wrinkles over the bulge above the eyes" (Joslen). In the bull a small white streak passes downwards in front from just above to just below the eye. The ears are large, and are white or black with a white margin and a rich orange colour inside where they are devoid of hairs and sometimes have a black patch near the tip. The ears hang straight down with the opening forwards and inwards when not in motion. The face is short, narrow, and finely cut; the muffle is black and small and that and the nostrils are clear cut and well defined. The neck is short and very thick in the bull but fine in the cow. The hump is big and well developed in the bull, curving over straight backwards on to the middle line of the back in a peculiar manner as though terminating in a short abrupt point folded under itself. The hump is medium sized or small in the cow. The dewlap is large and pendulous in the bull and the cow, but especially so in the former, and consists of a simple fold of the skin extending from the chin to the brisket. The skin generally is thin and pliant and of an orange yellow colour. The chest is capacious with well turned



KANKREJ COW.

Height—Top of hump . . .	51½ inches	Length of shank . . .	6½ inches
Behind hump . . .	49½ "	Length of horn . . .	16 "
Length of body . . .	48½ "	Length of face . . .	19 "
Girth . . .	64 "	Breadth of forehead . . .	7 "
Shank—Girth . . .	6 "	Length of ear . . .	12 "

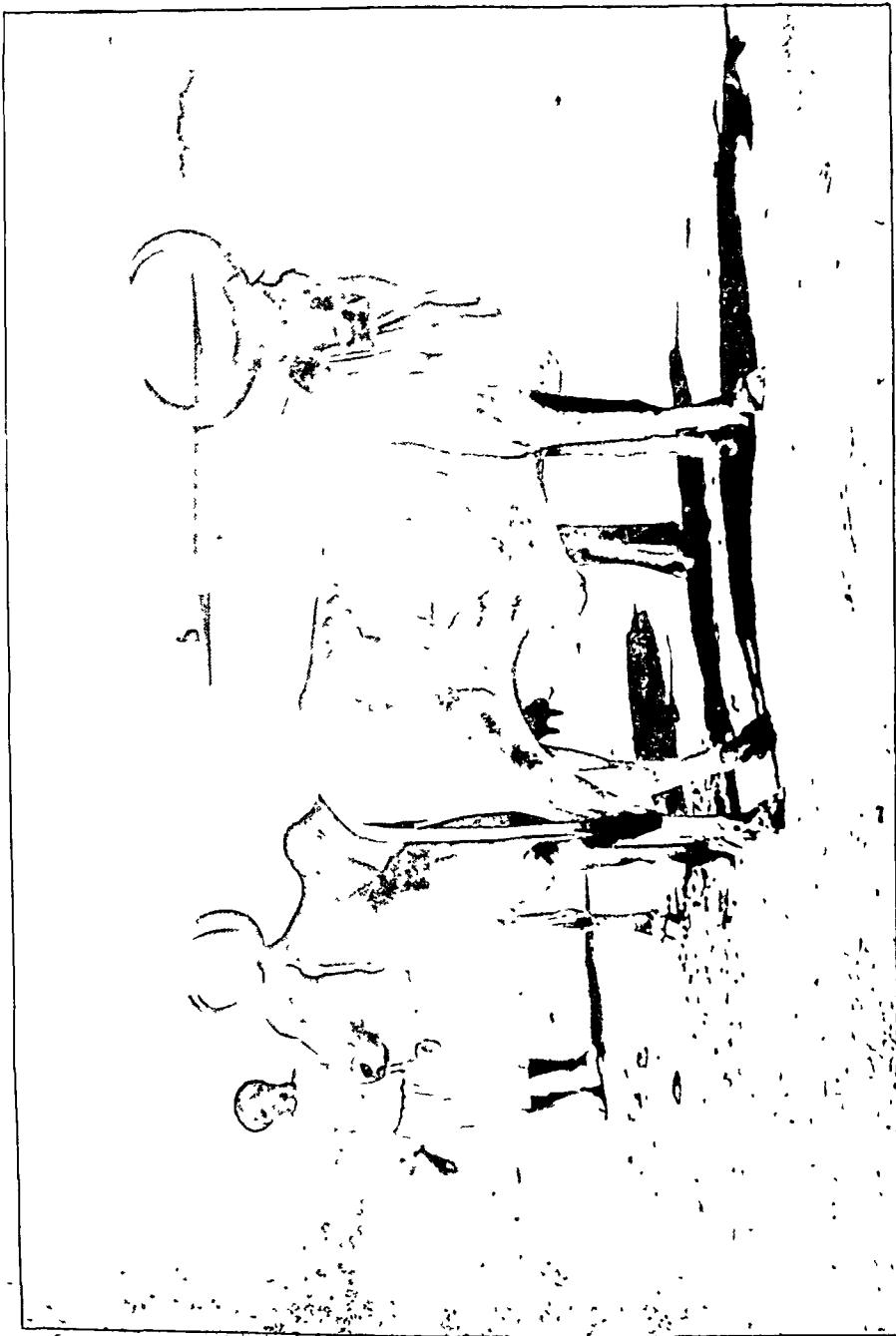
ribs and the body long. The back has a slight upward inclination to the croup in many specimens and the quarters droop. The tail is thin with a tuft of black hair a foot or so in length and reaches to a little below the hocks. The elbows are free and well defined. The forearms and thighs are muscular. The sheath is thin. The limbs are straight and clean with good well defined bone and tendons. The feet are hard, black and well shaped and the action is level. The udder of the cow is small as a rule but of good shape with well separated teats. Thickness of horn is much admired by the Rabaris or native breeders, especially in bulls, and to induce this they are accustomed to pick or scrape off the horn from the horn core when the calf is about a year old, or when the horns commence to appear, repeating the operation when the animal reaches two or even two and half years of age. This practice accounts for the abnormal horn development seen in some specimens of the breed. The modified strains of Kankreji cattle generally known as Gujarati cattle depart from the above description to an extent varying in proportion to the admixture of other blood. In many the variations are but slight, whereas in others the variations are more marked. Generally speaking they have the same general form but are wanting in such points as indicate quality, such as finely chiselled features, thin skin, clean straight limbs, well defined muscles and tendons, and spirit. Others again show want of symmetry. A rounded forehead and backward slope of the horns denote an admixture of Gir or Kathiawar blood; a long narrow face and small horns a Sind cross; and a flat forehead, thick-set frame with small horns having a forward slope a Malvi cross.

The cattle of this breed are chiefly bred by professional breeders—mostly Rabaris and Bharwads. These people in addition to cattle breeding not infrequently also cultivate land, but cattle breeding is their principal means of livelihood. A certain amount of cattle breeding is also carried on by cultivators, but generally speaking the cultivators do not interest themselves in the production of stock and prefer to purchase young stock from breeders and rear them. The size of the herds owned by individual breeders varies considerably. Before the famine of 1899 large herds of cows numbering in some cases as many as one or two hundred with several bulls were not uncommon. Now a herd of 50 head of stock is not common and bulls of the pure breed are very scarce. The usual number of stock now owned by a breeder is from 10 to 15 cows with a few head of young stock.

The whole Province of Gujarat is more or less suitable for cattle breeding, but in certain parts the conditions are more

favourable than in others. The pasturage in most parts of the Ahmedabad and Kaira districts is sufficient for present requirements, and even in the purely agricultural parts there is usually a fair amount of grazing obtainable along the borders of the fields and hedges. Further to the south in the Broach and Surat districts the conditions are not so favourable for cattle breeding both as regards climate and pasturage, and an inferior class of animal is in consequence produced by the breeders of those localities. The breeders of Kankreji cattle depend almost entirely on grazing for the maintenance of their stock except during the hot season when the grazing obtainable is scanty and worthless. At that time a small ration of jawari or bajri kadbi or other fodder is sometimes given to the cattle. Rabaris and Bharwads are good cattle masters and frequently move their herds from place to place for change of pasture or when the grazing near their own villages becomes scarce. They also take advantage of every opportunity to vary or improve the diet of their animals without additional expense. They graze their cattle over cultivated fields after harvest and are not over particular to observe that harvest is finished, not infrequently driving their cattle into fields from which the crops have not been removed. The breeding stock are never tied up. They are taken out to graze in the early morning; during the heat of the day they lie crowded together in the shade and graze again in the evening. At night they are brought into yards surrounded by fences made of babul thorns. They are never sheltered. The sites chosen for the yards are high and dry and usually close to the owners' dwelling. In some localities the cattle are grazed at night during the monsoon months on account of the myriads of flies which torment the cattle and keep them from grazing. They are then brought into yards or under a tree during the day and fires of dung and grass are kept burning to the windward side of them to keep away the flies by means of the smoke. The cattle are herded promiscuously in one large herd with which one or sometimes two bulls are allowed to run. Careful mating of cattle is not invariably carried out, but at the same time the Rabaris understand the main principles of cattle breeding.

The stud bull is usually a selected animal, and among the best breeders the selection of the bull is regarded, rightly, as of the utmost importance. The best bull calves are chosen for the purpose and these bull calves have been got by a well-known bull out of a selected cow. In Radhanpur some of the breeders know the pedigree of their bulls for several generations on the male side, the selection being committed to memory



KANKREJ COW.

Height—Top of hump .	51½ inches	Length of shank .	64 inches
Behind hump .	49 "	Length of horn .	17½ "
Length of body .	52 "	Length of face .	16 "
Girth .	64 "	Breadth of forehead .	6½ "
Shank—Girth .	5½ "	Length of ear .	11 "

and not written. The prominent Rabaris know many good bulls by name and when in want of stud bulls attempt to get hold of their progeny. The bull calf selected as a stud bull is fed and reared with great care and allowed a free supply of food at all seasons. Such bulls are fit for service and are used at stud when 3 to 3½ years old. Stud bulls are used from this age until they are 6 or 7. They are then turned out of the herd and sold and young ones substituted. In this way Rabaris guard against the risk of a bull covering heifers which are his own offspring, to which practice they object on religious as well as other grounds. There are very few young entire stock kept by Rabaris; usually they castrate them and sell them as yearlings. Although the bulls are sold by breeders of Northern Gujarat at 6 or 7 years old they are still serviceable for stud work for many years. Bulls are capable of getting fair stock at 16 years of age and will serve cows up to 18 or 19 or even older. At the latter ages, however, they seldom fill the cows, and if they do the calves are weakly and small. The bull is always allowed to run with the cows and is never tied.

Cows of this breed are generally speaking poor milkers and the breed as a whole is not well suited for dairying. However, certain selected animals give a milk yield of from 15 to 22 lbs. a day if well fed. The yield of an average cow is from 4 to 10 lbs. a day. The cows are milked twice a day. The calf is brought to the cow and allowed to commence suckling so as to induce the cow to let down her milk. The calf is then removed and the cow milked; but she is not milked dry, the calf being allowed to suckle after milking is over. Cows as a rule stand quietly while being milked, but it is not uncommon to fasten the hind legs together with a rope above the hocks as a precautionary measure. If the calf dies the cow dries up. Cows remain in milk from 6 to 8 months, sometimes a little longer. Cows calve usually once in two years, but some calve once in 18 months. Cows do not come into season after calving for 9 months to a year if the calf lives and they suckle it or are milked. If the calf dies they come into season earlier. Cows may come into season at any time of the year but during the monsoon months is the most common time. The cows therefore usually calve towards the end of the cold weather or commencement of the hot season. Cows usually calve out in pasture and in most cases without assistance. The cow is usually in charge of the herd has to calve the cow. Rabaris understand something of this operation and very few accidents occur. The navel of the calf receives no attention. The calf is placed before the cow and

she is encouraged to lick it clean. The Rabari then carries the calf to the yard. The cow is given a drink of bajri flour gruel and the calf is encouraged to suckle. Cows will continue to breed until over 15 years of age and even older, but the calves from old cows are small. The bulls always run with the cows and serve those in season while grazing. In some cases cows from villages where no bull is maintained are brought when in season to the bull and allowed to run with him until covered.

Heifers first come into season between $3\frac{1}{2}$ and 4 years old, and have their first calf between 4 and 5 years old. They almost always come into season first in the monsoon.

The calf is sometimes allowed to take the "beastings," but some Rabaris consider that this does the calf harm and milk it out on to the ground; others give it to the cow, and in towns it is frequently sold to Parsis and Muhammedans, who make a sort of condensed milk cake of it called "batri," which is considered a great delicacy. The calf gets all the milk for the first week after calving. Then the owner takes part of the milk if the calf is a cow calf, but if a bull calf it gets all the milk for some time. The calf is occasionally given a little gruel made of bajri flour and curds to make up for the milk taken by the owner. The calf at about two months or three months old learns to pick at solid food and in some cases is allowed a small ration of concentrated food. The calf is kept in the pen until three months old. The calf is weaned at 6 to 8 months; bull calves are weaned earlier than heifer calves. In some cases after weaning the calves are allowed a small ration of concentrated food to prevent them from going back in condition. After weaning, the calves are allowed to graze with the herd. Bull calves are castrated before 12 months old and usually sold soon after. The operation of castration is usually performed by Dhers, Bhangis, or Savanis, who receive a fee of 3 pies for each calf operated upon.

As a general rule the cultivator prefers to purchase bullocks as yearlings and rear them himself. The Rabaris of Northern Gujarat bring large numbers of young bullocks from the breeding grounds to the highly cultivated tracts. The stock purchased and reared by the cultivators grow, it is said, into much finer work cattle than if purchased when older, because they receive better food and greater attention than the Rabari can give them. Bullocks are broken and put to light work when between three and four years old. They are not put to the harder kinds of work until 5 years old, when they are mature. The working capacity of these cattle is considerable. They are active and strong and



KANKREJ BULLOCK.

Height—Top of hump	60 inches	Length of shank	6½ inches
Behind hump	55½	Length of horn	18
Length of body	55	Length of face	22
Girth	71½	Breadth of forehead	9
Shank—Girth	7½	Length of ear	14

equally well adapted for the road or the plough. They are free movers and have a characteristically easy gait and stately bearing. In Gujarat the roads are usually lower than the surrounding country and several inches deep in sand, and in consequence the work is considerable when a heavily-laden cart has to be drawn over them. A pair of good cattle will easily draw a load weighing 32 maunds (40 lbs.=1 maund) in the ordinary country cart, which weighs 16 maunds, 12 to 15 miles in the day at an average rate of two miles an hour or faster if pressed. For trotting work they are used in shigrams and are excellent for the purpose. For field work in a sandy country they are unsurpassed. They will plough from two to three acres a day through the rainy season if well fed, but the amount of land ploughed depends on the quality of the soil and the amount of moisture in it. They walk much faster than any other breed used for agricultural operations on this side of India. They require but little driving and step out without trouble or incessant urging.

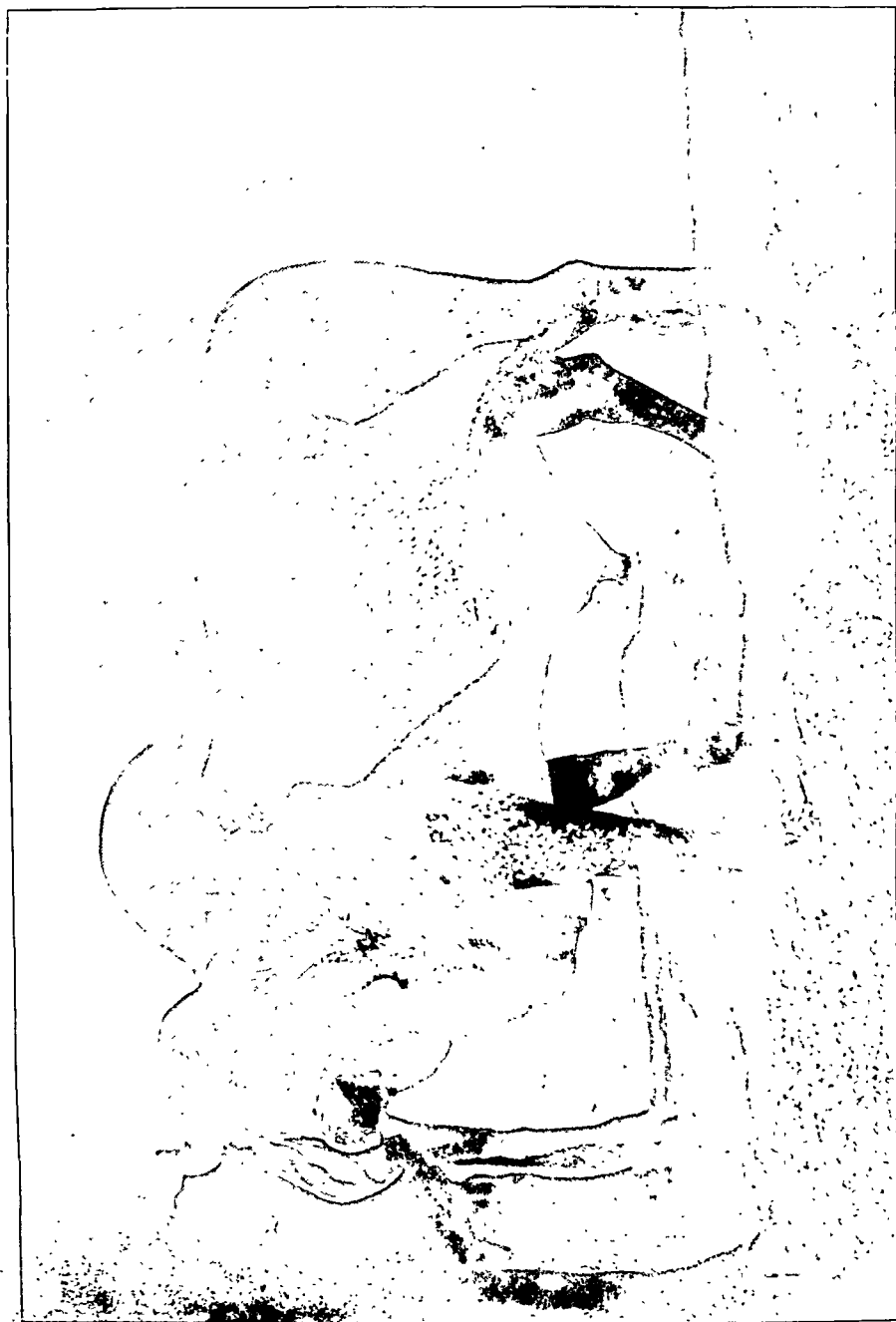
The methods of feeding vary according to the class of stock, to the crops grown in the locality, their market prices and the means of the owner. As a general rule working bullocks are well fed. The almost universal fodder for them is jawari kadbi, or bajri kadbi or surmar, and in the way of concentrated food guvar is the most usual grain; sometimes math or cotton seed or oil cake is given. Occasionally ghee or jagery is added. Sometimes in the place of kadbi the leaves and husks obtained from treading out the guvar or other pulses termed gotar is given. Before the cultivating season (*i.e.*, monsoon) comes on the cultivator gets his cattle into condition by giving them a liberal diet containing as a rule guvar or some pulse as one of the chief ingredients. During the busy season this diet is maintained, but at its close when the cattle are not required to work so hard the diet is reduced and little or no grain is given and kadbi is the main article of diet; sometimes the cattle are turned out to graze and then receive very little extra food. The amounts and varieties of the food given vary very considerably, but an usual ration for a working bullock is guvar 4 lbs. and kadbi 25 lbs. per diem divided into two feeds. The guvar is crushed and soaked before being given.

Cows belonging to Rabaris do not as a rule get more than they can pick up at pasture or steal from cultivated fields. Also cows belonging to others do not receive much attention, but if used for dairying purposes they may receive special rations. They are given in this case a diet consisting of kadbi and cotton seed, crushed bajri or jawari with oil cake and a little salt.

Bulls as a rule are expected to maintain themselves principally at pasture, but they receive rations of guvar, jawari, bajri and kadbi with ghee and jagery at times.

There are but few cattle markets in the Province of Gujarat, the principal one being held at Ahmedabad every Friday.

The Rabaris bring herds of young stock from the breeding grounds for sale direct to the cultivators, and this is the most usual method of distribution of cattle of this breed. The prices of stock have risen to some extent in recent years. Really good Kankreji bulls are extremely difficult to obtain and are worth from Rs. 150 to Rs. 200; bulls not quite true to type are worth from Rs. 125 to Rs. 150. Really first class working bullocks are worth about Rs. 300 per pair, but fairly good class pairs can be had from about Rs. 250. Unbroken three-year-old bullocks are worth from Rs. 75 to Rs. 80 each. Two-year-old bullocks are worth from Rs. 40 to 50 and yearling bullocks are worth from Rs. 25 to Rs. 40. Cows are worth from Rs. 40 to Rs. 80 and yearling heifers can be obtained for Rs. 15 to Rs. 35.



GIR BULL.

Top of hump 59 inches Behind hump 49 inches

GIR CATTLE.

These cattle are the pure type of the so-called Kathiawar breed. They are bred throughout Kathiawar but more especially in the Gir forests and hills situated in the southern portion of the Junagadh State, from which they take their name. Towards the north-east of Kathiawar the breed is often not pure, showing evidence of intermixture of blood of other strains. It is not uncommon in those parts to cross Kankreji bulls with Gir cows with the object of producing animals combining the milking qualities of the Girs with the good working qualities of the Kankreji. Gir cattle are also frequently met with in all parts of the Presidency and are much esteemed as milch cattle in Bombay. In Kathiawar various States (among others Palitana, Rajkot, Wankaner, and Sayala) maintain herds of these animals.

Gir cattle are pre-eminently a milking breed, but the male stock are also useful general purpose animals, although they are somewhat slow and lethargic when compared with Kankreji or Khillari animals. They are slightly above the medium in size. A good specimen of a Gir bullock will stand 50 to 53 inches behind the hump with a girth of from 68 to 73 inches. The bulls stand somewhat less, measuring 49 to 52 inches behind the hump with a girth measurement of 69 to 74 inches. Cows stand from 46 to 50 inches behind the hump with a girth of from 63 to 67 inches. A variety of colours is met with, but the more common ones are red, tawny, brown, dirty white, speckled and roan. Large blotches of different colours are never met with in well bred Girs. The ears, poll, neck, limbs and tuft of hair at the end of the tail are usually dark, being generally dull red or even black. The head as in all other breeds shows the most characteristic appearance. The forehead is particularly broad, round and prominent and the backward slope of the horns makes the prominence more noticeable. In the bull especially the forehead is greatly developed, but in the cow although prominent it is much less strongly marked. The horns are short and thick at the base, they curve backwards sharply and then incline forwards. In cows the horns are thinner and longer and have a backward and inward inclination. The eyes are black and sleepy looking. The eyelids are heavy and shade the eye giving it a treacherous expression. The ears are long and pendent and have been likened to those of a lop-eared rabbit. The points incline inwards and near the point on the inside is a peculiar notch. The bull appears

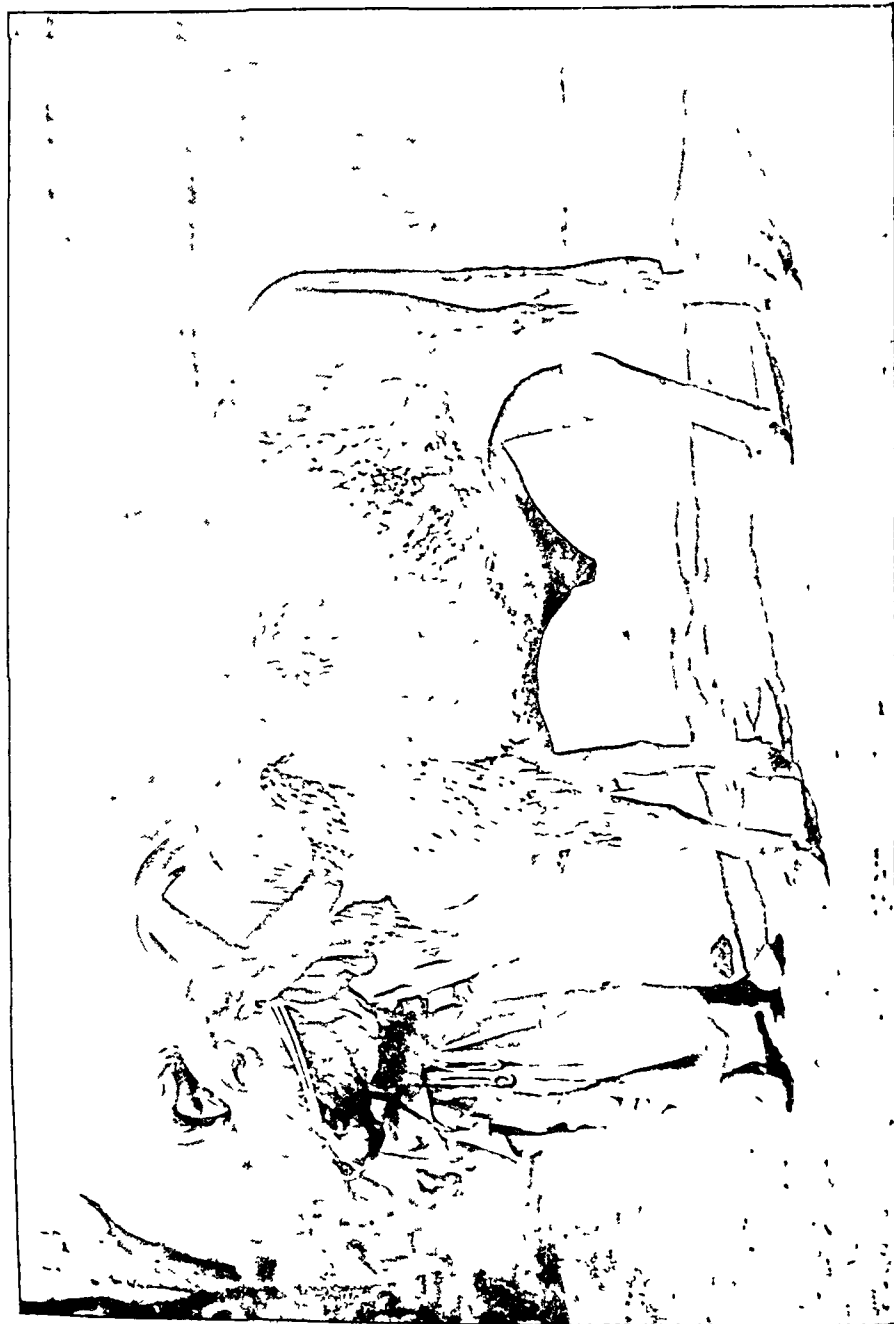
short, but this is due to the width and prominence of the forehead; in the cow the face appears long. The muffle is large and black. The neck is short and thick in the bull but finer in the cow. The hump is very large in the bull but only of medium size in the cow. The dewlap is developed and pendulous and there is much loose skin about the jowl and neck. The sheath of the bull is pendulous and on the belly of the cows a hanging fold of skin is common. The chest is well developed and capacious. The back is well developed. The quarters droop. The limbs are straight and well set on with good bone below the knee and hock. The thighs are often deficient in muscular development. The feet are large and inclined to spread. The udder of the cow is usually of fair to medium size but is somewhat pendulous. The teats are large but often unevenly placed. Gir cattle exhibit a very characteristic uniform appearance and are remarkably true to type. In general appearance most are massive, but in some specimens there is a tendency to legginess.

Cattle of this breed are largely bred in Kathiawar by professional breeders (Rabaris, Bharwads or Chambhars) but cultivators and other villagers also breed them to some extent. Herds are also maintained by some of the Chiefs of the Kathiawar States. Outside Kathiawar these cattle are not uncommonly met with, especially in the herds of dairymen, etc. Large numbers of them have been introduced into the Deccan to replenish the stock of cattle diminished by famines, but they rapidly degenerate under Deccan conditions. They are known as Surtis by the cultivators of the Deccan. In Kathiawar the professional breeders individually own herds numbering from 15 to 30 head, but families usually keep their herds together and share the work of herding, etc. The breeders of the south of Kathiawar lead a more or less wandering life, moving their cattle from place to place as the grazing becomes exhausted. The adult cattle are never housed nor sheltered but suckling calves are kept in huts during inclement weather. Careful mating and breeding is not always carried out, but the breeders like those of Gujarat understand the broad principles of breeding. The bull is usually a selected animal of pure blood and from good milking stock. The breed is chiefly noted for its milking qualities but the male stock are useful for ordinary road or field work. They are, however, slow and are more suitable for heavy draught. Their feet are soft and it is essential that they be carefully shod if required to work on hard ground or the roads. Old animals become very slow and lethargic at work and require constant urging and chastisement. The cows



GIR COW.

Height—Top of hump	.	53	inches	Length of shank	.	.	6½	inches
Behind hump	.	48	"	Length of horn	.	.	11½	"
Length of body	.	52½	"	Length of face	.	.	23	"
Girth	.	63½	"	Breadth of forehead	.	.	12	"
Shank—Girth	.	6½	"	Length of ear	.	.	12	"



GIR BULLOCK.

Height—Top of hump . . .	58½ inches	Length of shank . . .	6½ inches
Behind hump . . .	53 "	Length of horn . . .	29 "
Length of body . . .	55 "	Length of face . . .	24 "
Girth . . .	73 "	Breadth of forehead . . .	10 "
Shank—Girth . . .	74 "	Length of ear . . .	13 "

are good milkers and in Kathiawar yield when in full milk from 20 to 24 lbs. a day. They remain in milk for 8 or 10 months as a rule, but some are said to give milk up to 18 months. Their milking capabilities appear to be somewhat diminished when removed from their own locality. The cows are milked morning and evening, and it is usually the practice for the milkers to tie the hind legs together above the hocks to prevent kicking, but it is unusual to tie the cow up while milking. Calves are kept with the cows to induce them to let down their milk. Cows calve once in two years, but with high feeding and greater domestication will calve once in twelve months. The cows as a rule do not come into season until after the calf is weaned, but when in a more advanced state of domestication they come into season within three months of calving. Heifers first come into season between three and four years old, but sometimes not until five years old. These cattle usually have to depend on grazing for food and grass is not cut and stacked for fodder as a general practice. The grazing in the Gir forest is excellent and at most seasons of the year abundant. In those localities where grazing is scarce small rations of kadbi supplement the grazing available.

The price of these cattle has risen in recent years as is the case with all other good class cattle in India. Good class bulls are worth from Rs. 150 to Rs. 175. Good pairs of working bullocks are worth from Rs. 100 to Rs. 175 per pair in Kathiawar but in the Deccan are worth somewhat more, Rs. 200 being a fair price for a really good pair. Unbroken three-year-old bullocks are worth from Rs. 40 to Rs. 50 each, two-year-olds are worth from Rs. 30 to Rs. 40, and yearlings are worth from Rs. 15 to Rs. 20. Cows are valued according to their milk yield. A fair price for a cow giving 6 or 7 seers a day when in full milk is from Rs. 40 or Rs. 50, but for one giving 12 or more seers a day and of a good milking strain Rs. 100 or even more is not an unusually high valuation. Cows of the same class in Bombay are worth about Rs. 30 in excess of these prices.

KRISHNA VALLEY CATTLE.

This breed is one of the larger varieties of Indian cattle. The animals are enormously powerful but are unsuited to fast work or work on rough stony ground. They are especially suitable for field work in deep rich soils or for heavy slow draught work on roads. However, when worked on roads the greatest care must be taken of their feet as they are bred in localities where the soil is soft and yielding, and in common with all cattle bred in similar localities their feet are soft and liable to spread. Cattle of this breed are met with in various parts of the Southern Maratha Country, but are bred specially in the valley of the Krishna. They are bred in the States of Ichalkaranji, Kolhapur, Sangli, Miraj, Kurundwad, Ramdurg, Jamkhandi and Mudhol and also to some extent in the Athni and Chikodi talukas of the Belgaum district, the southern parts of the Satara district and parts of the Bijapur district bordering on the Krishna. Specimens of the breed are also met with fairly frequently in the Dharwar district and occasionally in the Sholapur and Poona districts, but in these places they are not bred. The breed has resulted from an intermixture of several breeds of cattle of the larger kinds, but the breed which has played the most prominent part in the production of Krishna valley cattle is undoubtedly the Nellore or Ongole breed from Madras. Cattle of that breed were introduced, it is said, many years ago and crossed with the local cattle or so-called Gaonti which in the Krishna valley were larger and finer than those met with in the uplands of the Deccan generally. The resulting cross was again bred to Nellore bulls and this breed resulted. The cross has, however, been modified somewhat by the introduction into the Krishna valley of Surti or Kathiawar cows from time to time, chiefly for milk purposes (as the Krishna valley breed are poor milkers), and these having been bred to local bulls have left their mark on the breed. Krishna valley cattle are therefore by no means a pure breed, and as one would expect in a breed produced in this way without very careful selection or breeding to a particular standard, the type is by no means fixed. In point of fact very wide variations are met with in cattle of this breed, and any description given can only be more or less accurate.

Krishna valley cattle are one of the larger breeds. Good specimens of bulls or bullocks of this breed measure from 50 to 58 inches behind the hump with a girth measurement of from 70 to 83 inches. A good specimen of a cow will measure



KRISHNA VALLEY BULL.

Height—Top of hump	.	63½ inches	.	Length of shank	.	6½ inches
Behind hump	.	55 "	.	Length of horn	.	9 "
Length of body	.	65 "	.	Length of face	.	24 "
Girth	.	74 "	.	Breadth of forehead	.	9 "
Shank—Girth	.	—	.	Length of ear	.	13 "

to 56 inches behind the hump with a girth measurement of from 69 to 80 inches. The colours vary considerably; white and grey are perhaps the predominant colours, but broken colours are by no means uncommon. Amongst these, white with black or brown spots or patches distributed over the body is probably the most usual. The head is massive and the face moderately long. The forehead is wide and bulging thus increasing the appearance of massiveness of the whole head. The muzzle is large and black. The horns are short, thick, flat and blunt and rise well to the side of the frontal bone taking an outward slightly upward course. The ears are long and drooping and often have a yellowish colour inside. The eyes are large, full and dark and have a mild, docile expression. The eye is placed somewhat to the side of the head and the eyelids are wrinkled. The neck appears short and is thick and massive, the muscular development being great. The hump is very large in the bull but less so in the cow. The dewlap is very large and pendulous and is joined by a fold of loose skin hanging between the fore-legs to the sheath, which is also pendulous and greatly developed. In the cow the place of the sheath is taken by a pendulous fold of skin on the belly. The chest is wide, deep and capacious. The back and loins are broad and level and have a tendency to rise at the croup. The hind quarters are long and have but little tendency to droop. The tail is long, fine and tapering and the tuft of hair at the extremity often almost reaches the ground. The limbs are well set on and the arms, forearms, thighs, gaskins, particularly the latter, are well developed and muscular. The cannons are short, flat and large and the quality of the bone is good. The feet are fairly well shaped but in old animals are inclined to spread. The horn of the hoof is black in colour. The general appearance of the animal is massive, heavy and lethargic. Krishna valley cows are poor milkers, giving when in full milk about 6 lbs. in the whole day. They are milked morning and evening. They produce a calf once in 18 months and are fairly regular breeders. Heifers begin to breed when three years old.

The cattle are bred by well-to-do cultivators who as a rule own only two or three cows each and rear the young stock for their own use. Large herds belonging to one individual are never met with and professional breeders do not keep these animals. The grazing in the Krishna valley is very limited in extent on account of the general richness and fertility of the soil rendering the cultivation of the land a much more profitable undertaking than grass growing. Nevertheless there are some kurans and sing lands on the river banks which are liable to inundation and are suitable for cultivation.

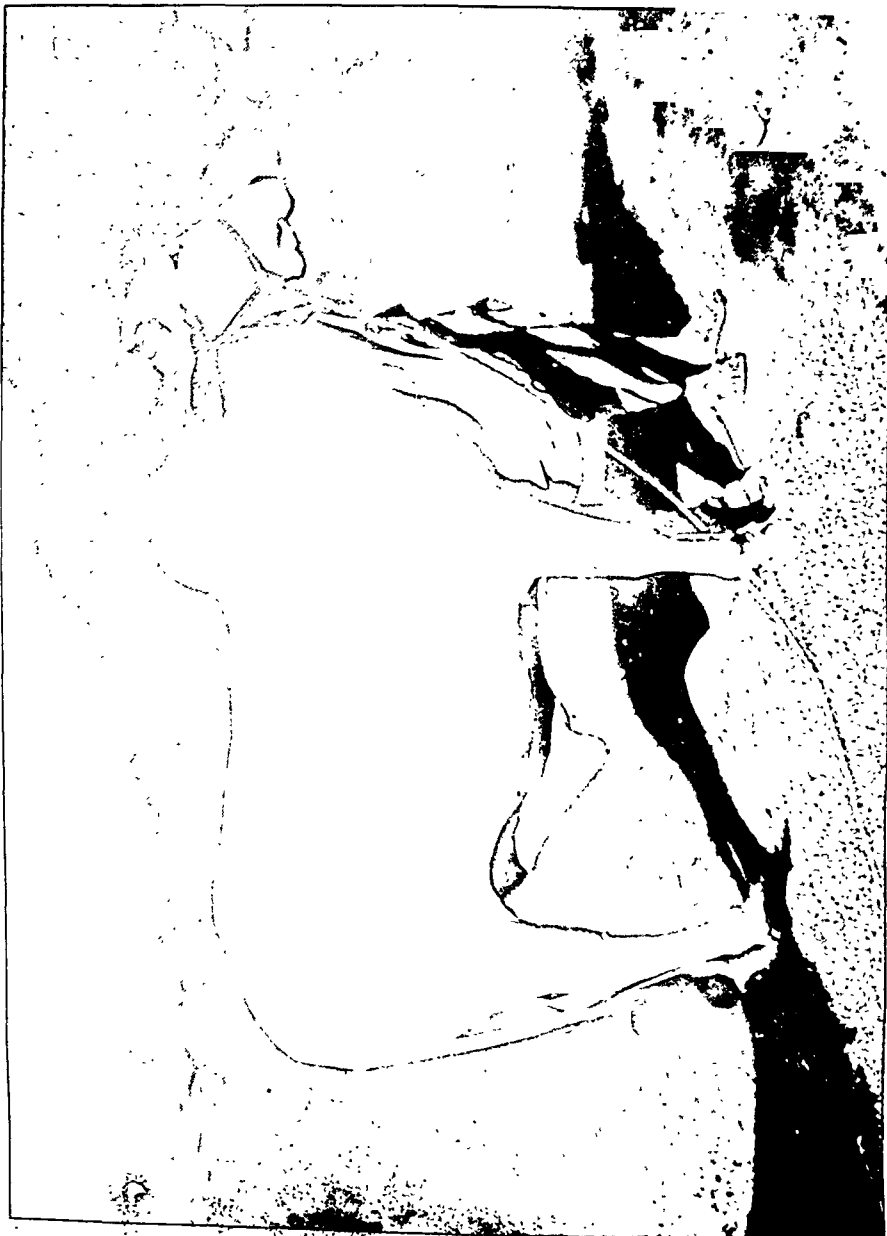
tion. These grounds are as a rule well shaded with groves of babul trees which grow to considerable size. Most of the kurans are reserved for grass cutting and the cattle are only turned in after the grass has been cut and carried. But the grazing and kurans are not the chief sources from which cattle owners maintain their stock. The Krishna valley breed is very largely a stall-fed one and depends chiefly on the supply of jawari kadbi, which is grown in large quantities and of good quality in the breeding tract. In addition to kadbi the cattle receive some allowance of concentrated food, chiefly cotton seed, oil cake and chuni. At certain seasons of the year green food, such as green kadbi and maize, is given in large quantities daily. The leaves and stems of the groundnut are also fed to cattle at certain seasons. Working bullocks are exceptionally well fed and in addition to the above-mentioned forage, bajri or jawari flour, jagery, ghee or oil and spices are mixed and given to them. The cattle of a village are allowed to graze during the day in one herd but they are brought up at night and housed and fed with kadbi. In many villages there are pol bulls dedicated to local deities, and these animals are as a rule good specimens of the breed and serve a useful purpose. The village pol runs with the herd while at pasture and bulls the cows as they come in season. The polys are allowed to go anywhere they please and feed off standing crops with impunity; the most the owner of the field can do is to drive them off his own land. The young male stock are emasculated by crushing the cord in the ordinary native ways at ages between one year and three years old. The bullocks are put to light work after emasculation but not as a rule before three years of age.

Krishna valley cattle can be purchased at the Chinchli Fair in the Kolhapur State which is usually held in the month of February. Cattle of this breed can also sometimes be procured at Mhaswad Fair, Sholapur Fair and Mangsuli Fair. The chief centre, however, for distribution of cattle of this breed is the Chinchli Fair. It is very difficult to procure cows of this breed as the breeders usually retain them for themselves unless old or barren or otherwise useless. The prices vary widely, but for a good class Krishna valley bullock or bull between 3 and 5 years old Rs. 200 to Rs. 225 each is a fair average price. Exceptionally fine bullocks are valued at from Rs. 300 to Rs. 450 each but few change hands at these prices. Good Krishna valley cows are worth from Rs. 75 to Rs. 150, but they are obtained only with great difficulty. Young male stock between 1 and 2 years of the best types are not procurable as the breeders prefer to retain them, but mediocre animals



KRISHNA VALLEY COW.

Height—Top of hump .	52 inches	Length of shank .	7 inches
Behind hump .	49	Length of horn .	14½
Length of body .	60½	Length of face .	21
Girth .	70	Breadth of forehead .	8
Shank—Girth .	61	Length of ear .	10



KRISHNA VALLEY BULLOCK.

Height—Top of hump . . .	60½ inches	Length of shank . . .	12½ inches
Behind hump . . .	58 "	Length of horn . . .	22 "
Length of body . . .	58½ "	Length of face . . .	"
Girth . . .	78 "	Breadth of forehead . . .	"
Shank—Girth . . .	6 "	Length of ear . . .	"

at this age fetch from Rs. 75 to Rs. 80. Occasionally fancy prices are paid for very fine pairs of bullocks of this breed, and it is said that as much as Rs. 1,000 or Rs. 1,200 has been so paid. Cattle of this breed are greatly prized for their excellent working qualities in the deep black soil of the locality which requires very heavy draught animals to do the deep ploughing necessary. One pair of Krishna valley cattle perform the work which three to four pairs of smaller animals could hardly perform. The cost of maintenance and care which these animals require is, however, a factor which precludes any but the well-to-do from using them. Cattle of this breed have recently been exported to Brazil and other States in America with the object of crossing them with the indigenous varieties.

KHILLARI OR HANAM CATTLE.

The cattle of this breed are medium sized animals and are pre-eminently suited to road work in which strength and endurance combined with activity and moderate pace are requisites. Notwithstanding that they are best suited for cart work they make excellent all-round working animals when properly broken. They work well both at the mote and in the plough, especially when castrated, but their fault for these purposes is their fiery disposition rendering them difficult to control when uncastrated and half-broken. The breed moreover is a hardy one and able to withstand conditions which could not be borne by the larger and heavier breeds accustomed to the more favourable conditions of fertile breeding tracts. The breed also is very "impressive," transmitting the Khillari characteristics to a great extent even when the strain of Khillari blood is but remote. The breed is therefore very suited for grading up the smaller and weaker breeds of the Deccan generally. In fact this process has been going on for some time as is evinced by close observation of numbers of the larger and better so-called Deccani cattle. Cattle of this breed are bred in parts of the Sholapur, Satara, and Bijapur districts, the Native States of Jath, Miraj, Sangli, Oundh, Jamkhandi and Kolhapur. The breed was formerly more numerous than at present in the British districts named and was, it is said, at one time, the common breed in the valley of the Man, a tributary of the Bhima, and is still known to some as the Mandeshi breed. There are breeders of these cattle in the Sangola, Pandharpur and Malsiiras talukas of the Sholapur district, in the Indi taluka of the Bijapur district, in the Man, Khanapur and Koregaon talukas of the Satara district. The Atpadi Mahal of the Oundh State is noted for these cattle and Mangalwedha is the grazing ground of the herds of the Sangli State. The States of Jath, Miraj, Sangli, Oundh, Jamkhandi, Mudhol and Kolhapur maintain herds of these animals.

There is but little doubt that this breed originally came from Mysore as the general type is that of the cattle met with there and as the term "Hanam," meaning the south, would also indicate, but no records are available to show when or by whom they were introduced. The breed has, however, been located for many years in the districts named, and has moreover undergone such changes, possibly resulting from environment and infusion of other blood, as to constitute a separate breed. Some confusion exists as to the term Hanam and Khillari. Some people maintain that the names



KHILLARI BULL.

are synonymous but others state that there is a difference. They state that the Hanam is a breed resulting from a cross of the Amrit Mahal with cows of the Krishna valley breed, and that the Khillari breed results from a cross of the Amrit Mahal with the larger cows of the Deccan breed. But the differences are slight and hardly more than is noticeable between different specimens of the same breed. The chief points of difference being that so-called Hanam have a somewhat wider forehead and a more or less forward curve of the horns. Although the districts named are the principal localities in which these cattle are bred, yet cattle of this breed are also met with in the pure state in parts of Khandesh and especially the Satpura Hills. Khillari cattle are bred extensively by professional herdsmen in the Satpura range of hills, chiefly in Holkar's territory to the north of Khandesh. "Khillari cattle are mostly bred in the following places in the Satpuras:—Chhodi, Boradi, Dhodwada, Hated, Sapkani, Badvani, Melon, Ketia, Sangvi and Palasner." "Khillari cattle resemble Mysore cattle in conformation and those now bred in the Satpuras must have sprung originally from imported stock. It is said that one Gowdia Dhangar of the Nasik district some 80 years ago owned Mysore cattle and in a year of scarcity took them to the Satpuras. The present Khillaris are descendants of these cattle. The original pure-bred bulls are said to have been used on white Varadi cows" (Mollison). Khillari cattle are still met with in large numbers in Khandesh. Specimens of this breed are occasionally met with throughout the Deccan and there has been a considerable infusion of Khillari blood into the Deccani breed, improving them in size, stamina and endurance without greatly reducing their hardiness.

Khillari cattle are of medium size. Good specimens of bulls or bullocks of this breed measure from 50 to 54 inches behind the hump with a girth measurement of from 66 to 80 inches. A good cow will measure 44 to 48 inches behind the hump with a girth of from 58 to 63 inches. The predominant colour among the cows and bullocks (which, however, are rarely met with as castration is not commonly practised) is white or greyish white. The bulls are more frequently grey, tawny, or reddish, shading into iron grey, or reddish brown on the neck, hindquarters, forearms and cannons. In many specimens mottled white and grey markings are observable about the face and dewlap and in some specimens this mottling is shown over the whole body. Other specimens are dark in colour, being in some cases dull brown or dark grey with white markings about the head, dewlap and the neck. In a general way, the characteristics of the Khillari are as follows:

the Amrit Mahal from which breed they have in all probability originally sprung. But Khillaris are bigger in frame and somewhat coarser and do not possess the high caste appearance which is so marked a characteristic of the Amrit Mahal. The head and horns, as in other Indian breeds, show the most characteristic points of the breed. The face is long and narrow as in the Amrit Mahal, and the forehead has a backward slope and bulges above the eyes causing a depression or furrow in the middle line of the forehead which extends upwards to the poll. The horns rise close together from the frontal bone, diverging and taking a backward direction until near the extremity they curve upwards somewhat suddenly. The horns are thick at the base and very sharp at the extremities. The length of the horns is usually moderate to short in the bull, but in the cow and bullock they are considerably longer. The above is a general description of typical horns, but many variations are met with with regard to the slope, direction and curve. In colour the horns are usually pink or pinkish brown and are usually streaked with brown or black, but it is difficult to observe the colour of horns of cattle of this breed as it is customary among the people to paint them. This is especially the case with regard to bulls and bullocks but is also the case to a lesser extent with the cows. It is also customary in bulls and bullocks to tip the horns with ornamented brass caps or to bore a hole through the horn near the tip and decorate it with a coloured tassel. The expression of the eye is fierce and treacherous, the mucous membranes of the eyes being frequently injected, giving the eye a reddish appearance. The eyes are deeply set in the sockets which are placed towards the side of the head. The fissure between the eyelids is elliptical. The skin of the eyelids is yellowish or pink or flesh coloured. The skin over the eyes is wrinkled, with, as a rule, three deep well marked furrows. The ears are small, short and pointed. They are usually carried in a backward and outward direction when at rest but are moved freely in an alert manner when the animal is in motion. The muffle is yellowish or pinkish yellow or flesh coloured and is occasionally mottled. In the bull the neck is short and very thick but in the cow it is fine. The hump in the bull is large and massive but small and light in the cow. The dewlap is fairly large and developed in the bull but is somewhat less in the cow. The chest is wide, deep and capacious with considerable girth. The back and loins are wide and strong with considerable muscular development. The hind quarters and croup droop. The tail is long and fine with a brownish or black tuft of hair at the extremity. The limbs are well set and the forearms and flanks are muscular. The feet are small, hard and well formed. The joint of the horn of the hoofs



KHILLARI COW.

varies, black or brown are common colours but pink or yellowish brown is often seen. The general appearance of the animal is compact and sturdy. A not uncommon defect, however, met with in Khillari cattle is lightness of bone below the knee, but the bone appears to be of good quality. Khillari cows are very poor milch animals and seldom yield more than is just sufficient for the needs of the calf. (The Khillaris met with in the Satpurās slightly differ from those met with in the Southern Maratha Country. They are smaller and lighter and not so compact. The colours are almost always whole white.) They produce a calf about once in every 18 months, but some calve once a year and others only once in two years. The heifers begin to breed at from $3\frac{1}{2}$ to 4 years old. It is customary to allow the calf the whole of the milk and the calf suckles as long as the cow remains in milk. The cow does not as a rule come into season after calving until the calf is weaned, which is after 6 to 8 months as a rule. All Khillari cattle are uncertain in temper and inclined to be intractable, especially when they are bred in herds and unaccustomed to be handled. Vicious Khillari animals are positively dangerous to approach and are capable of inflicting very severe wounds with their long, sharp horns, which form most formidable weapons when the animal is charging.

In the tract of the Deccan and Southern Maratha Country, where the larger section of this breed is met with, it is unusual for one person to own more than three or four cows, and moreover the owners are not generally professional herdsmen but cultivators. The cattle are herded with the other village cattle on the grazing grounds, such as they are, in the neighbourhood of the village, and are not taken to distant grazing grounds as is the custom with the professional herdsmen when the home grazing becomes exhausted. On the other hand the State herds (which number several hundred head of stock in some herds) are moved from kuran to kuran as the grazing becomes exhausted, and as kurans in the States named above are excellent grazing grounds there is but little scarcity in ordinary years and no extra ration is required. Amongst the villagers, however, in British districts where the grazing grounds consist chiefly of bare stony wolds and waste lands the grazing does not last for more than three or four months after the rains, and in consequence kadbur or surmanis given in small quantities to the breeding stock. The village bred Khillaris are during the rains housed at night and at other times are brought up into yards in the vicinity of the villages. Villagers who own good Khillari cows are extremely unwilling to sell them and take great pride in them. The young male stock are a great source of profit

as they find ready sale at 18 months or two years old for prices between Rs. 100 and Rs. 150 each. The people are careful to get their cows covered by selected bulls, but in many cases they experience difficulty in obtaining the services of suitable animals. The following methods of breeding, etc., are adopted by the breeders of Khillari cattle in the Satpura Hills:—

“These cattle are bred by Khillaris or Dhangars and Vanjaris. The former are cattle or stock breeders and dealers, pure and simple. The latter may also cultivate land. Each owner has 25 to 200 cattle, and generally about 100 head are herded together with two men in attendance. Bulls specially selected as suitable sires are herded with the cows and young stock. Young bulls are generally sold when one or two years old. Cows or cow calves are rarely sold. The herdsmen generally remain in their own talukas but wander from place to place in the hills, moving from one place to another as the grazing gets bare. There is never absolute scarcity of grazing except perhaps occasionally in May. At this season the grass is very dry and innutritious and sometimes half a lb. per head per day of cake or cotton seed is given. The leaves of unjan and pipar are given to the cattle also at this time. The cattle are rarely brought near villages and are extremely wild except with their own herdsmen. They are never sheltered. In the rains a rocky place in barad soil, naturally dry and well drained, is selected and the cattle are penned here at night but never tied. During daylight they graze in the adjoining jungle grazing grounds” (Mollison). “The streams are perennial and the drinking water is abundant. The grazing is good and shaded.” “In January and February the cattle are brought down from the hills to the cultivated plains and range over the fields, which at the time are bare of crops, but afford a fair picking in the stubble and headlands. The cattle get a complete change and thrive” (Mollison).

Khillari cattle can be purchased at the Mhaswad and Nagoba Cattle Fair in the Satara district in December, at the Yallama Devi Fair at Jath usually held in January, or at the Chinchli Fair held usually in February. They may also sometimes be obtained at the weekly market at Sangola or at Pandharpur and Sholapur. The best place to obtain them, however, is at the Nagoba Fair near Mhaswad. The male stock only are obtainable at these places as cows are much prized by the owners and not sold. Every year a fair number of young stock are disposed of at the Nagoba Fair at Rs. 75 and Rs. 150 for young bulls between 18 months and 2 years old. Adult bulls fetch prices ranging from Rs. 150 to Rs. 250; for really good specimens Rs. 400 is not an un-



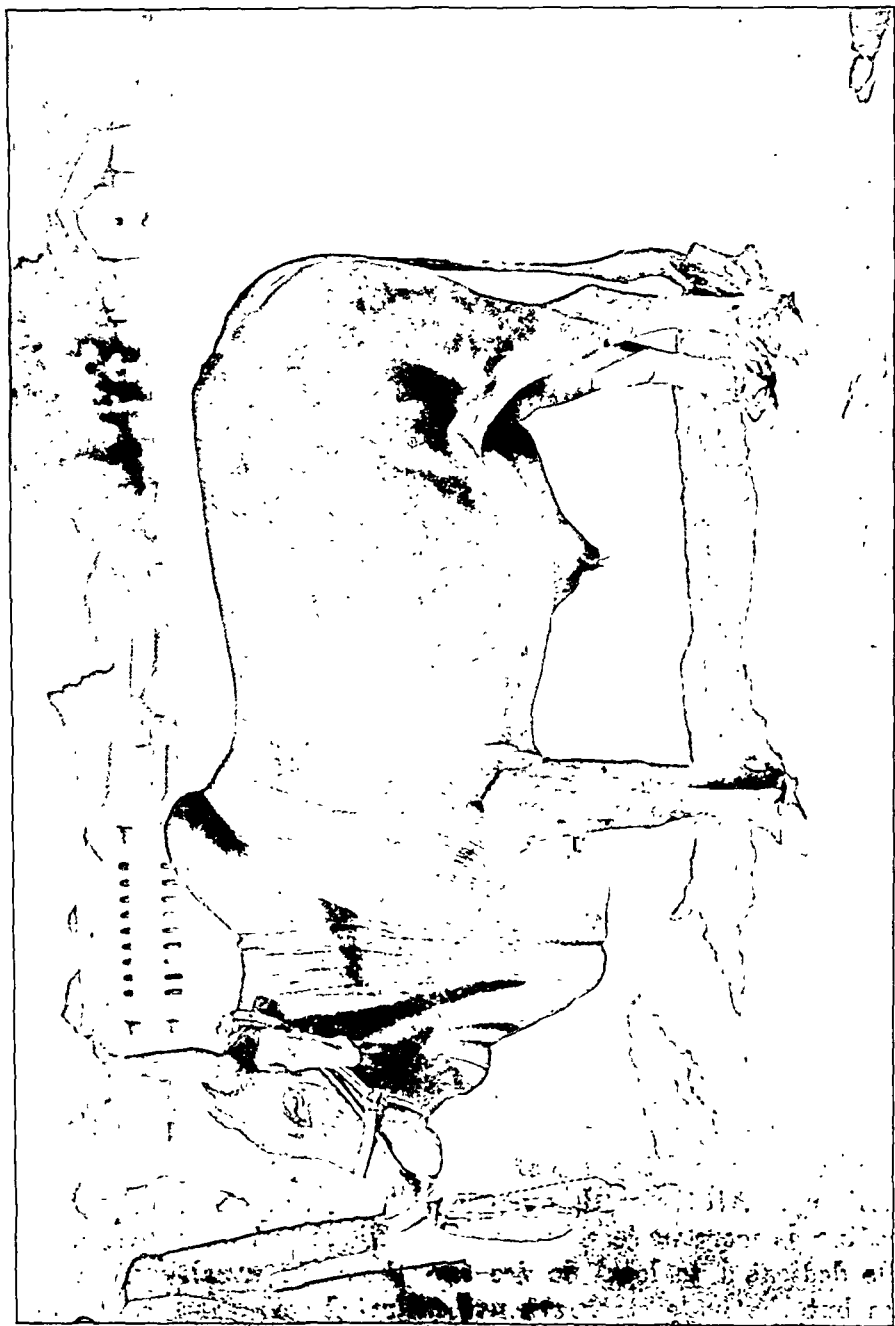
KHILLARI BULLOCK.

Height—Top of hump	54 inches	Length of shank	6½ inches
Behind hump	49½	Length of horn	27 "
Length of body	55 "	Length of face	24 "
Girth	66 "	Breadth of forehead	8½ "
Shank—Girth	6½ "	Length of ear	9½ "

common price paid. In some cases sums ranging between Rs. 700 and Rs. 1,000 have been paid for exceptionally fine pairs of working cattle; but these sums are, of course, fancy prices, the purchasers being anxious to procure a showy pair of cattle. The Satpura section of the breed are hard to obtain as they are not brought in large numbers to fairs but are disposed of by wandering dealers. A few of these cattle can sometimes be obtained at Shirpur, especially during July, August and September. Mr. Mollison states: "The young bulls are bought up by local dealers, and when sold are herded separately from the cows for a month in the hills and are then driven in small droves towards the Deccan for sale. They are as far as possible handled and made more or less domesticated, but they are not easily tamed. It takes at least three months to make them at all tractable. A good many of these cattle are brought annually into Ahmednagar and Poona districts." "The purchasers of the younger animals have to keep them for two or three years before they become fit for regular work. Meantime they become quiet and domesticated by kindly handling." These dealers sell young bull calves between 9 and 12 months old at prices varying between Rs. 30 to Rs. 50.

MALVI CATTLE.

These cattle are principally bred, as the name indicates, in Malva, and very few are bred within the confines of the Presidency, although they are occasionally in Khandesh, Panch Mahals and eastern part of Ahmedabad. They are, however, extensively imported into the Presidency as work cattle and are frequently met with working in Bombay and other cities of the Presidency. They are also much prized by well-to-do cultivators of the Deccan who purchase young male stock of this breed from Hedis and Vanjaris. These animals are entire and frequently cover the local cows, and in consequence it is not uncommon to see in many localities animals with strains of Malvi blood. They are essentially a working breed and are not good milch cattle. The breeding tract is situated within the Central India Agency. The best description of Malvi cattle are believed to be bred in Newari, Sonkas, Tonk, and Agar in the Sajapur district. Other centres are "Zarda, Manpur, Ujjain, Jogati, Kalukheda, Gotampura, Tarana, Bichdod, Sajapur, Alot and Javra and other smaller villages of minor importance" (Mollison). "The rainfall of these places varies from 36 to 40 inches. There are perennial streams. The soil on the lowlands is black and fertile. There is first class grass and grazing in the upland low hills which are shaded with trees" (Mollison). "The grazing grounds and grass lands are extensive. Grass is cut in quantity, made into hay and saved for use during the hot season when other fodder becomes scant and for feeding at night at all seasons. The chief cultivated crops are jowar, maize and linseed. Breeding cattle get no feeding except what they pick up in the grazing grounds along with hay and kadbi at night" (Mollison). The breeders are also largely cultivators. They do not own large herds and very few possess more than a dozen breeding animals. "Some few breeders possess larger herds (up to 200 animals). Almost all occupants of land own a few" (Mollison). "The only professional herdsmen are Gavalis who depend for their living on cattle breeding and the sale of milk, ghee and other milk products" (Mollison). All the cattle are herded together and so the system of breeding is more or less haphazard. There are numerous pols or bulls dedicated to local deities and these are usually of superior class but the male stock are not castrated early and young bulls cover the cows. The cattle are grazed during the day but brought into open yards during the night in the fair season or into sheds during the rains. They are not tied.



MALVI BULL.

Height--Top of hump . . .	51½ inches	Length of horn . . .	12½ inches
Behind hump . . .	46½ "	Breadth of forehead . . .	8 "
	Length of ear . . .		10 inches



MALVI COW.

Height—Top of hump . . .	50 inches	Length of shank . . .	6 inches
Behind hump . . .	46 "	Length of horn . . .	14½ "
Length of body . . .	50½ "	Length of face . . .	19½ "
Girth . . .	63½ "	Breadth of forehead . . .	11 "
Shank—Girth . . .	5½ "	Length of ear . . .	10 "



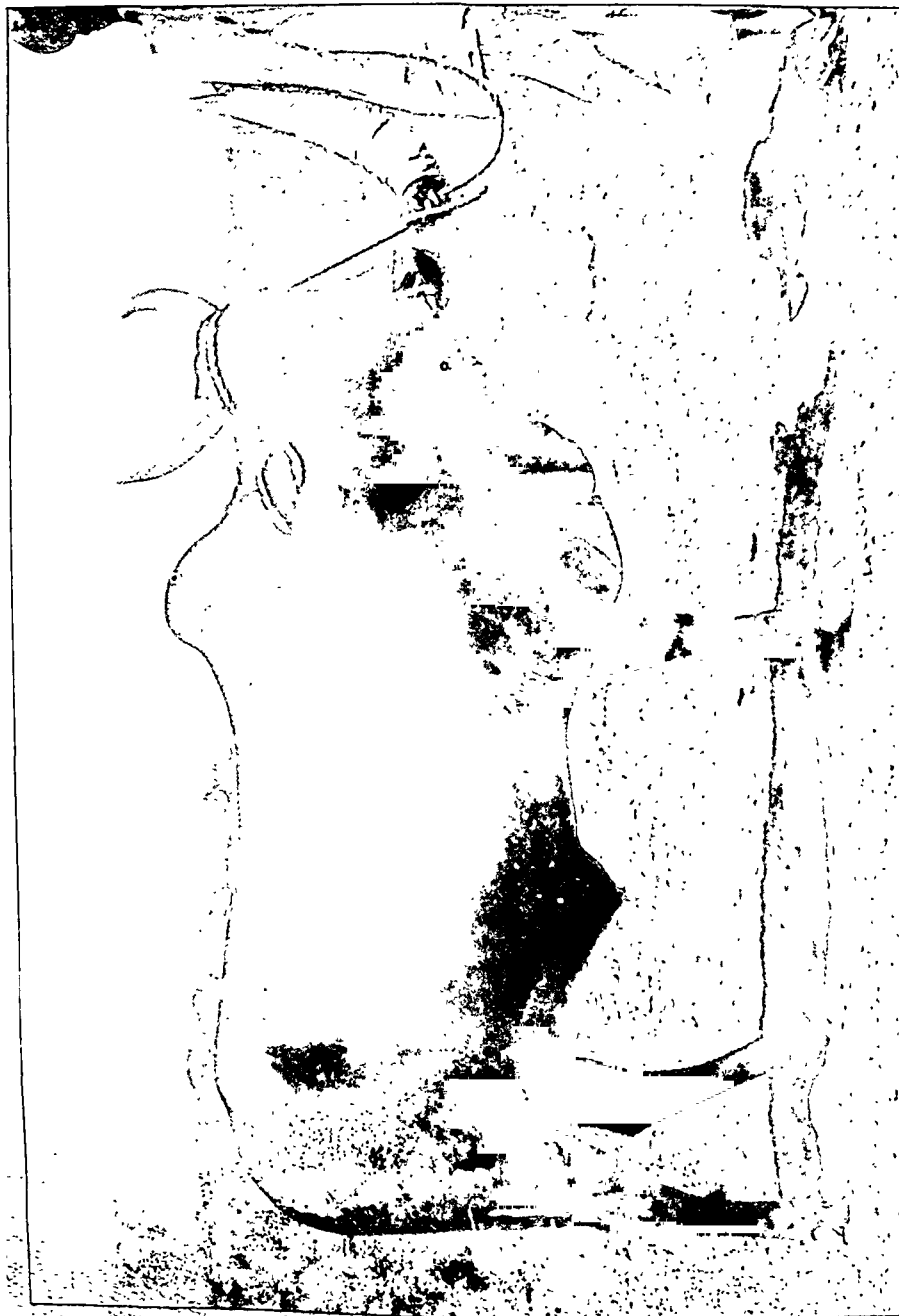
MALVI BULLOCK.

Height—Top of hump	51½ inches	Length of shank	6 inches
Behind hump	47½ "	Length of horn	12 "
Length of body	51½ "	Length of face	20½ "
Guth	65 "	Breadth of forehead	7 "
Shank—Guth	6½ "	Length of ear	10 "

Mr. Mollison describes these cattle as follows:—

“Malvi cattle have been bred pure for a very long period. They are particularly true to type and have certain peculiar characteristics which leave no doubt as to their purity of blood. The predominating colour is pure white. Grey or silver grey specimens are common but broken colours are unknown. In a grey or silver grey specimen usually the limbs, neck and head are a darker shade than the body. Malvis are essentially work cattle, medium in size and adapted for any description of ordinary work. They are spirited, active and strong and equally good for the plough, the cart or for well work.” “The Malvi is generally very shapely in appearance having the frame wide and deep but not very long. It is supported on squarely set well shaped limbs with good flat bone and round hard feet. There is a slight droop in the hind quarters. There is not much loose skin on the sheath but that on the neck and dewlap is well developed. The hump is large. The head and horns are very characteristic. The muzzle is large and jet black, the eye membranes and the hair immediately surrounding the eye socket are also jet black. This characteristic is a ‘Hallmark,’ invariably found in pure-bred Malvis. The head is short, the eyes are dark, prominent and have a docile appearance. The ears are short with little or no tendency to droop. The horns are very characteristic. They are moderately thick at the base, of fair length and are sharp pointed and invariably spring in a forward and upward direction from the head with a graceful outward bend.” A good specimen of Malvi bullock stands from 47 to 55 inches high behind the hump and has a girth measurement of 65 to 70 inches. The cows are somewhat smaller, 45 to 50 inches behind the hump being a fair average measurement with a girth of from 60 to 65 inches. Malvi cows are not good milch cattle. They seldom yield more than 4 to 6 lbs. per day and frequently only two or three lbs., but cows are not valued principally for their milking powers, the breed being essentially one for working purposes. The Gavalis own the best milking cattle. Cows belonging to ordinary cultivators or other breeders are seldom milked, the calf being allowed to suckle the whole. “Heifers are of breedable age at three or four years. Cows generally produce two calves in three years” (Mollison). These cattle can be obtained at weekly bazars held in Malwa among which are those at Ratlam, Indore, Zavra, Nagashi, Kaurai, Alot, Gotampura, Delchi, Sipra, Sitaman, Tarana, Kharat and Mandvi. Large sales of these cattle take place at fairs held periodically at Agar. A good pair of Malvi bullocks is worth from Rs. 150 to Rs. 200. A good Malvi cow is worth from Rs. 30 to

Rs. 40 or more but inferior ones fetch only from Rs. 20 to Rs. 25. It is stated that Hedis and Vanjaris visit the local breeding grounds and buy up the young male stock at three years old at prices ranging from Rs. 25 to Rs. 40, and take them in droves to the Deccan where they resell them at Rs. 50 or Rs. 75 a head.



DECCANI BULLOCK.

Height—Top of hump . . .	51 inches	Length of shank . . .	6 inches
Behind hump . . .	47½ "	Length of horn . . .	11 "
Length of body . . .	52 "	Length of face . . .	20 "
Girth . . .	65½ "	Breadth of forehead . . .	7½ "
Shank—Girth . . .	6 "	Length of ear . . .	8½ "

DECCANI CATTLE.

The cattle of the Deccan are usually classed as a breed, but in the case of the majority of animals met with the term is a misnomer as the animals are of no fixed type, size, conformation or colour. They are in point of fact mongrels, having strains of various breeds such as the Khillari, Kathiawari or Surti, Malvi, Dangi and even Krishna valley mixed with the older type of Deccani cattle which in large measure they have replaced. These mongrel animals are often, however, useful working cattle of the general purpose sort and the better specimens met with are fine, compact, massive animals of medium size. They possess a common characteristic, and that is hardiness and ability to withstand with some degree of success the exceedingly unfavourable conditions under which they have been bred and reared. It is also noteworthy in connection with these animals that they respond in a wonderful manner to good feeding and care. It often happens that a cow which to all outward appearances is weedy and apparently lacking in every good quality will produce a calf which if well fed and tended from birth will develop into quite a good working bullock.

Any detailed description of these mongrel animals is quite impossible as there is no fixed type. Nevertheless the animals may be briefly described as medium sized animals standing from 44 to 50 inches behind the hump. The colours are variable. Brown, dark red, light fawn, white grey and black are common colours. Broken colours are also frequently seen. The head and horns vary greatly, and are often irregular.

In some cases the face resembles somewhat that of the Khillari and the horns take a backward trend, in others the forehead and face are flat and the horns take an outward and upward and then an inward curve; again others have the forehead showing resemblance to the head of the Gir, Surti or Kathiawar breed. In most cases in the male the hump is well developed and the neck muscular, thick and short, which results from the custom of emasculating the cattle at 4 or 5 years of age after the masculine characteristics have been developed. The cows of this so-called breed are as variable as the male stock. In some cases, especially in those in which there is a strong strain of Gir blood, the milking capacity is fair, but the majority of animals are wretchedly poor milkers, giving approximately 2 to 6 lbs. of milk per day and that only for a period of 3 to 6 months. A large number of animals now met with in the Deccan are mongrels, but a few specimens of the older type,

the true Deccani breed, are still to be met with in out-of-the-way villages. These cattle are a distinct breed and probably represent the aboriginal cattle of the Deccan and Konkan. A good specimen of a bullock of this breed will measure 42 to 46 inches behind the hump. A good cow will measure 38 to 44 inches behind the hump. The predominant colours are black, white and grey, but red, brown and broken colours are also met with. The head as in other breeds has a characteristic type. The forehead is flat and narrow. The face is long. The nimburi is well marked. The muzzle is large. The horns spring from the head in an upward and slightly outward direction and then curve inwards somewhat sharply. The horns of bulls and bullocks are shorter and thicker than those of the cows, not so sharp and have less tendency to curve upwards and inwards. The colour of the horn is usually black but varies. The eyes are prominent and mild in expression, and the membranes are usually black. The ears are moderately short pointed and well carried. The muffle is usually black. In the bull the neck is short and thick but in the cow fine. The hump in the bull is well developed but in the cow fine or even rudimentary. The dewlap is not well developed and hanging skin on the belly is absent. The sheath is not pendulous but tight up to the belly in most cases. The chest is moderately deep and rounded. The back is short. The coupling in some specimens is good, but there is a tendency to slackness in the loins and want of depth of the back ribs in many individuals. The hind quarters and croup droop. The tail is long and fine. The legs are well set on, but the bone is light. The feet are small, well shaped and hard. Deccani cows are poor milkers and seldom yield more than enough milk for the calf. In some cases they are milked and the calf almost starved. They yield about 2 to 6 lbs. a day for 5 or 6 months. These animals are active and hardy. They are useful for road work with a light load, for trotting work on the road in light chuklas or for field work in the lighter soils with a small plough. Some specimens of the breed are excellent trotting animals and will trot easily at the rate of 7 or 8 miles an hour, and moreover cover long distances in the day. In some cases they have been known to draw a light load 60 miles in 24 hours. The above descriptions only apply to the better sort of animals met with and in no way describe the type of animal often seen in village herds. These are miserable scraggy beasts, leggy, with little bone, with crooked legs and are usually in poor condition. The cows are nearly always small, measuring 4 inches behind the hump. The cows are nearly always weakly and small standing, frequently as

little as 36 to 38 inches behind the hump. The village herds in general show the effects of continuous in-breeding and lack of selection coupled with bad cattle mastership and periods of scarcity approaching semi-starvation. It is not at all unusual to see from 6 to 8 pairs of these animals in the larger sort of plough employed in the deep cultivation of the more fertile bottoms and valleys, and even in the lighter soils usually three or four pairs have to be used.

These Deccani and so-called Deccani animals are owned by cultivators and not by professional breeders. One individual usually owns not more than two or three cows and a few young stock. These are allowed to run in the village herd which is usually tended by boys or children. The pasturage is generally speaking poor and deficient and only lasts for 4 or 5 months in the year, after which the cattle graze over the fields from which the crops have been carried. When the picking from these has been exhausted stall feeding with kadbi has to be commenced and carried on until the following monsoon. Cows usually only receive the leavings of the work cattle. The cattle are usually brought up at night into yards or sheds and let out during the day only. The male stock are not emasculated until 4 or 5 years old when they are mulled. (The idea of delaying the operation until this age is that bullocks will be heavier and also stronger in the neck and so more capable of supporting heavy weights on the yoke.) In consequence of the operation being delayed the young animals are able to cover cows before they are emasculated, and it usually happens that they cover a good many of the cows, being more active and quicker than the village bull, even if there is one maintained, which is by no means always the case. There are always several young bulls in the village herd, and so there is at present but small chance of mating cows to selected bulls. The Deccani villager regards a calf merely as a calf and does not trouble himself in the least as to how it is got. He trusts entirely to luck and hopes his cow will give him a good calf although he takes no trouble to ensure it doing so. The breeder trusts much more to good feeding than to good breeding, and in cases where a good bullock is desired all the milk from the cow is allowed to the calf and later a sufficiency of kadbi, the result often proving successful—a useful working animal being produced. But the haphazard method of producing stock has had its consequences which may be seen in almost any village herd and as shown by the number of small undersized animals which are useless for any purpose whatever.

Cattle of this breed are met with throughout the Central Division and also in the Ratnagiri, Kolaba and Thana districts. Cattle of somewhat similar characteristics are also met with in the Bombay Karnatic and North Kanara. The principal mode of distribution of these cattle is by means of weekly cattle markets held principally at taluka towns. Some also are brought for sale to the principal cattle fairs at Sholapur, Mhaswad, Nagoba, Jath, Chinchli, etc. A good many are also brought to Mhasa fair in the Thana district. These fairs and weekly cattle markets are largely attended by buyers for butchers. These people buy up numbers of the small stunted cows and also deformed, injured, chronically lame or worn-out bullocks and despatch them to Kurla or Poona for slaughter. Very few animals of any utility are so disposed of.

The prices of Deccani animals sold at these fairs and markets vary greatly. Inferior animals fetch from Rs. 15, those a little better from Rs. 30 to Rs. 60, moderately good animals from Rs. 60 to Rs. 80 and first class animals of the breed from Rs. 80 to Rs. 125. Cows and young stock are not sold in large numbers except in the case of small stunted cows sold to butchers which fetch from Rs. 10 to Rs. 30 depending on size and condition. Deccani cows of the better class for milking purposes are worth about Rs. 50 each. The prices of all stock in the Deccan have increased greatly in recent years.



JOWARI BULLOCK.

Height—Top of hump .	.	53 inches	Shank—Girth .	.	5 inches
Behind hump .	.	48 "	Length of horn .	.	12 $\frac{1}{2}$ "
Length of body .	.	53 "	Length of face .	.	20 $\frac{1}{2}$ "
Girth .	.	68 "	Length of ear .	.	10 "

JOWARI CATTLE.

The term jowari is applied to the common type of cattle bred in the Southern Maratha Country. Strictly speaking these cattle cannot be classed as a breed. They are really mongrel animals, mixtures of several breeds and indiscriminately bred. They are not of one type. They are usually lightish in colour, yellow, or light brown with white mottling. Some are whole coloured, dark brown being then a not unusual colour. The horns are usually distinctly V-shaped and show evidence of some admixture of Mysore blood. The horns are usually thick, fairly long and straight and are widely separated at the extremities. The slope of the horns is *usually straight backwards, upwards and outwards, but varies considerably*. In some the horns are bent backwards, in others forwards. Some specimens are fairly well developed and are good general purpose animals but others are wretched specimens of but little practical utility. In many respects these animals are very similar to the so-called Deccanis and probably arise from the same stock. They have been modified by locality and greater intermixture of Mysore blood.

THE DANGI CATTLE.

The cattle of this breed are also sometimes spoken of as the Ghauti, sometimes as the Konkani, but the name Dangi is more generally applied and signifies that the cattle come from the hilly country around the ghauts. These animals are principally bred in the western parts of the Nasik, Ahmednagar, and Poona districts, and also in the eastern portion of the Thana district. They are also met with in the Native States of Bansda, Dharmpur, Jawhar and the Dangs. They are, however, principally owned by people living in up-ghaut villages who are largely graziers and cattle breeders by profession but who also own and cultivate land. These people after the rains and when grazing near their own villages is getting scarce, send their cattle in charge of herdsmen, who are usually members of their own family, to graze in the forests of the ghauts and below-ghaut tracts. These herds often number a hundred and fifty or two hundred head of stock but are not all the property of one individual. Individuals as a rule do not own more than 20 to 30 head of cattle. These herds are usually taken into the forests of the Native States of the Dangs, Bansda, Dharmpur or Jawhar to graze in preference to being taken to Government forests as the grazing fees levied by the States are considerably less and but few restrictions exist. The Dangi cattle are well suited for general field work and light draught work in their own localities and in the Konkan generally. They thrive in climates where the rainfall is heavy and the humidity great. If, however, they are transported to drier climates where the heat is intense they prove of very little use and soon knock up if worked in the sun. In their own tract and in the Konkan they are hardy and possess considerable powers of endurance. They work well in rice fields and are able to work in the water like buffaloes. Some specimens of the breed are good trotting animals and are used in chuklas or light carts for this purpose.

Dangi cattle belong to the medium class of cattle, but they vary very greatly in size. A bull or bullock stands about 45 to 50 inches high measured behind the hump with a girth of 58 to 62 inches, cows or heifers reach 52 inches with a girth of 70 inches, and calves 40 to 45 inches, with a girth of 55 to 60 inches. The colours vary but are usually white with large black or dark brown patches irregularly distributed on the body. Sometimes cattle of whole colour are seen but they are not so usual



DANGI BULLOCK.

Height—Top of hump . . .	50 $\frac{1}{2}$ inches	Length of shank . . .	6 inches
Behind hump . . .	47 $\frac{1}{4}$ "	Length of horn . . .	8 "
Length of body . . .	55 "	Length of face . . .	20 $\frac{1}{2}$ "
Girth . . .	62 "	Breadth of forehead . . .	8 "
Shank—Girth . . .	6 "	Length of ear . . .	9 "

as the broken coloured ones. Good specimens are in general appearance strong, compact and sturdy. The head and horns show considerable variations. The horns are often thin, irregular and tapering but in other specimens are thick, very short and blunt. The shape of the horns varies greatly. In some cases they are closely set and take a backward trend as in the Khillari; in others the horns arise well to the side of the head and rise upwards and outwards and then curve forwards or inwards; in some, this forward curve is absent. The nimburi is always present but is more developed in some specimens. The face is usually long and narrow and the muzzle large. The forehead is usually flat but in cases bulges. The ears are small and pointed and do not droop. The hump is well developed in the male. The dewlap is well developed. The chest is moderately capacious. The hind quarters and croup show a marked droop. The tail is long. The bone is good in most specimens but very light in inferior ones. The feet are small and well formed and hard and black. The cows are poor milkers.

- The breed has not fixed characteristics and no attention is paid to breeding to type by the owners. The breed is, however, capable of improvement by careful selection and mating. It is the most suitable breed for all the below-ghaut districts, being far superior to the mongrel degenerate cattle of the Deccani type usually met with in the Konkan. Animals of the breed are hard to procure, unless one visits the talukas in which they are bred. Some are brought to the Mhasa fair and some are sold in weekly bazars in up-ghaut districts. The price varies considerably. A fairly good bullock of this breed is worth Rs. 60 and one of the better sort Rs. 75 to Rs. 100. Exceptionally good specimens are worth from Rs. 100 to Rs. 150. Inferior ones may be obtained from Rs. 30 to Rs. 40. Cows are worth from Rs. 20 to Rs. 40.

proud of them. This preparation gives them a very sleek and clean appearance." "Sometimes they are only partially shaved so that the remaining hair forms fanciful patterns. They are shaved that they may not harbour lice" (Joslen). These "buffaloes are generally black in colour or black with a white poll and white tuft to the tail. Many are dirty grey or dun, and in these the skin inside the thighs and forearms is of a rosy reddish tinge. Sometimes an albino may be seen with wall eyes" (Joslen).

Buffalo-cows are grazed all the year round and are given concentrated food twice a day. The following is an example of a day's ration:—

Cotton seeds	2 lbs.
Crushed bajri or jawari or a mixture of both	4 lbs.
Oil cake	2 lbs.
Salt	1 oz.

"They will also be given kadbi and a mixture of leaves and pods of various pulses in greater or less quantities according to the amount and quality of the grazing available and the means of the owner. Buffaloes are turned out of their stalls or owners' houses into the precincts of the village in the early morning as scavengers" (Joslen).

"Buffalo-bull calves are not reared. They are quietly made away with, handed over to the mahajans who send them to the Pinjrapole, or sold to butchers" (Joslen). "No particular care is taken as a rule in the breeding of buffaloes. The most promising bull calves or such as are the produce of the best cows are selected by the villagers and kept as bulls and these bulls are herded with the cows so long as they continue vigorous" (Joslen). "No objection is made to a buffalo bull covering his own offspring. In some cases buffalo bulls are kept by Vaghris or Rabaris who charge a covering fee of 2 or 4 annas or 10 seers of grain, and the tendency in this case is for the owner to allow his bull to cover as often as he can. As many as 100 cows three times each may be covered in a year. August and September are the usual months for covering operations, calves falling in July. Ten per cent. miss breeding for a period of 18 months" (Joslen). A good Surti or Nadiad buffalo will give from 20 lbs. to 30 lbs. of milk per day when in full milk, but the yield varies in different individuals.

"The quantity given reaches its maximum about a month or a little more after calving and continues for about 4 or 5 months, then gradually declines up to 8 or 10 months if the animal is not